

Most finds of *M. lamarmorai* were discovered on the west coast and in the western part of the island of Sardinia, and mainly comprise individual finds, but also belong to associated skeletal elements. The most important fossils are from Funtana Morimenta, a quarry south-southwest of Gonnesa in the valley of Rio Morimenta where it had already been discovered at the end of the 19th century. These fossils embedded in the Funtana-Morimenta lineup, which is composed of aeolian sedimentary formation that is located below a layer of strata dominated by a rock unit of conglomerates (the Tyrrhenian conglomerate). This rock formation is widely spread all over the west coast of Sardinia and is generally attributed to the last interglacial period that bears in northern Alpine region the term Eemian (126000–115000 years ago). The finds include mainly elements of the spine and musculoskeletal system, so among other things, a full foot, nearly complete hand,

Sardinian mammoth											
Temporal range: 0.45–0.04 Ma											
PreЄ	Є	OS	D	C	P	T	J	K	PgN		
Pleistocene											
Scientific classification											
Kingdom:		Animalia									
Phylum:		Chordata									
Class:		Mammalia									
Order:		Proboscidea									
Family:		Elephantidae									
Genus:		† <i>Mammuthus</i>									
Species:		† <i>M. lamarmorai</i>									
Binomial name											
† <i>Mammuthus lamarmorai</i>											
Forsyth Major, 1883											
Synonyms											
<i>Mammuthus lamarmorae</i> <i>Elephas lamarmorae</i>											

humerus and ulna, as well as remains of tusks. All discoveries are most likely to belong to a single individual. Other finds are known from San Giovanni di Sinis near Oristano, where a molar tooth was found in also deposited before the Eemian sediments, as well as an additional molar from Campu Giavesu in Sassari, which is, however, significantly larger. Finds from the Upper Pleistocene, which comprise a plurality of teeth are mainly from Tramariglio, near the city of Alghero, and came also from deposited sediments by wind, but above the Tyrrhenian conglomerate.^[4]

Classification

As a mammoth, *M. lamarmorai*'s closest living relative is the modern Asian elephant (*Elephas maximus*). The occurrence of this mammoth already in the late Middle Pleistocene makes that a descent from the classic woolly mammoth (*M. primigenius*) rather unlikely, since this latter species first appeared in Europe during the Upper Pleistocene. Rather, it is thought that the steppe mammoth (*M. trogontherii*), which lived on the continent, is the likely ancestor of *M. lamarmorai*. The steppe mammoth's molars had only eleven ridges, a feature much more archaic than those of the woolly mammoth, which had twenty six ridges. The Cretan pygmy mammoth (*M. creticus*) and *M. lamarmorai* are the only known dwarf mammoths on the islands of the Mediterranean Sea, which were otherwise occupied by diminutive members of the genus *Palaeoloxodon* (also included sometimes in *Elephas*).^{[3][4]}

The first description was published in 1883 by Charles Immanuel Forsyth Major, who used the name *Elephas lamarmorae*. He no published pictures, but saw a clear link to the Southern mammoth (*M. meridionalis*), which he in turn called *Elephas meridionalis* due to similarities. The remains were from the quarry Funtana Morimenta and are now kept in the Natural History Museum of Basel, where Major personally studied them. Because of new tooth finds since the mid-20th century, it became clear the close connection to the mammoths, which is why the name *Mammuthus lamarmorae* prevailed.^{[5][6]} As a result of adaptation to the International Rules for Zoological Nomenclature, one amendment was made in 2012 for the name, and *Mammuthus lamarmorai* is currently the valid species name. The species name, *lamarmorai*, honors to the Sardinian General and naturalist Alberto La Marmora (1789–1863), who had already in 1858 investigated the fossils of Funtana Morimenta.^[4]

Phylogeny

The origin of *M. lamarmorai* is still relatively unclear – the earliest finds date from the late portion of the Middle Pleistocene, as points their association with the dwarf deer *Praemegaceros cazioti*, and are thus about 450,000 years old. A colonization of Sardinia through the steppe mammoth should therefore be carried out in the transition from the old to the Middle Pleistocene or early Middle Pleistocene. Probably this happened during the Pleistocene glacial periods in which the global sea level was much lower due to the continental ice sheets and the animals could reach the island by swimming. Whether single mammoth populations Sardinia reached only once, is unclear, maybe the somewhat larger tooth from Campu Giavesu suggests that several migration waves appear to be possible, as is also demonstrated when detecting dwarfed forms of the genus *Palaeoloxodon* of the Mediterranean islands of Sicily and Malta.^[3]

References

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